



A.D. 1867, 31st JULY. N° 2212.

S P E C I F I C A T I O N

OF

JOSEPH MATTHEWS HOCKING.

CONDENSING NOXIOUS SMOKE AND
VAPOURS.

LONDON:

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A.D. 1867, 31st JULY. N° 2212.

Condensing Noxious Smoke and Vapours.

LETTERS PATENT to Joseph Matthews Hocking, of Marshal Keate, Poplar, in the County of Middlesex, for the Invention of “**IMPROVEMENTS IN THE MEANS AND APPARATUS FOR CONDENSING NOXIOUS SMOKE AND VAPOURS.**”

Sealed the 13th December 1867, and dated the 31st July 1867.

PROVISIONAL SPECIFICATION left by the said Joseph Matthews Hocking at the Office of the Commissioners of Patents, with his Petition, on the 31st July 1867.

I, JOSEPH MATTHEWS HOCKING, of Marshal Keate, Poplar, in the County of Middlesex, do hereby declare the nature of the said Invention for “**IMPROVEMENTS IN THE MEANS AND APPARATUS FOR CONDENSING NOXIOUS SMOKE AND VAPOURS,**” to be as follows :—

For this purpose the said noxious smoke or vapours are drawn by an air pump through a pipe connected to the flue or chimney of the furnace into water contained in one or more separate cylinders or cisterns. Into and within each or either of the cylinders or cisterns I insert a spindle, and on the said spindle I

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securely connect one or more discs or fans at a proper distance from each other; these discs or fans can be made of iron or any suitable material, and may have angular projections either above or below the surface of the material they may be composed of, or otherwise. During the passing of the noxious smoke and vapours from the flue or chimney into the cylinders or cisterns 5 the discs or fans are made to revolve within the water contained in the said cylinders or cisterns, either by engine power, pulleys, or any ordinary motion. These discs or fans when revolving powerfully agitate the water, thereby arresting and separating the ores, particles of ores, fumes, or acids contained in the said noxious smoke or vapours, and will effectually condense the same. 10

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said Joseph Matthews Hocking in the Great Seal Patent Office on the 30th January 1868.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, JOSEPH MATTHEWS HOCKING, of Marshal Keate, Poplar, in the County of Middlesex, 15 send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Thirty-first day of July, in the year of our Lord One thousand eight hundred and sixty-seven, in the thirty-first year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said 20 Joseph Matthews Hocking, Her special licence that I, the said Joseph Matthews Hocking, my executors, administrators, and assigns, or such others as I, the said Joseph Matthews Hocking, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully 25 might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for “**IMPROVEMENTS IN THE MEANS AND APPARATUS FOR CONDENSING NOXIOUS SMOKE AND VAPOURS,**” upon the condition (amongst others) that I, the said Joseph Matthews Hocking, my executors or administrators, by an instrument in 30 writing under my, or their, or one of their hands and seals, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

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NOW KNOW YE, that I, the said Joseph Matthews Hocking, do hereby declare the nature of the said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement, reference being had to the accompanying Drawing, and to
5 the letters marked thereon, that is to say :—

For this purpose the said noxious smoke and vapours are drawn by an air pump worked by steam or other power from the furnace or furnaces, through a pipe or pipes connected with such furnace or furnaces, into one or more air-tight cylinders or cisterns partially filled with water ; if more than
10 one then connected together by flues or pipes inserted in such cylinders or cisterns, as shewn in the Drawing. Into and within each of such cylinders or cisterns I insert a spindle, and on the said spindle within the said cylinder or cistern I securely connect discs or fans, spokes or projections ; these discs, fans, spokes, or projections can be made of metal or any suitable material of
15 sufficient strength, and have other projections angular or otherwise formed on one or both surfaces of such discs, fans, spokes, or projections. During the passing of the noxious smoke and vapours from the furnace or furnaces through the cylinder or cistern of water the spindles upon which the discs, fans, spokes, or projections are fixed are made to revolve in the water within the
20 cylinders or cisterns. The spindle or spindles are made to revolve by steam or other power. These discs, fans, spokes, or projections when revolving powerfully agitate the water, thereby arresting and separating the ores, particles of ores, metallic fumes, or mineral acids contained in the said noxious smoke or vapours, and condense or cause the deposit of the same on
25 the bottoms of the said cylinders or cisterns.

Figure 1 is a plan of the mechanical motion for driving the spindles in the cylinders or cisterns ; Figure 2, elevation and vertical section of apparatus constructed to produce the object of my Invention ; the same letters on such Figure correspond to similar parts in each Figure.

30 A, the air-tight cylinders or cisterns, such cylinders or cisterns can be made of copper, iron, or any material of sufficient strength with man-hole doors or removeable bottoms fixed thereto or without. B, the flue conducting the noxious smoke or vapours from furnace to cylinder or cistern B' ; the continuation of smoke pipe or flue from cylinder to cylinder, or cistern to cistern
35 where more than one cylinder or cistern are used ; C, the termination of pipe or flue from cylinders or cisterns connected with the air pump ; C', the pump for drawing the noxious smoke or vapours from the furnace into the water contained in the cylinders or cisterns and exhausting the smoke and vapours

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from the cylinders or cisterns, and forcing the same into a chimney or otherwise; D, the eduction pipe conveying the smoke or vapour from the pump; E, the discs, fans, spokes, or projections having sufficient clearance to revolve are driven by gearing or any mechanical motion on the spindle, and agitate the water during the passage of the noxious smoke or vapours through the 5 cylinders or cisterns; F, blow-off cocks for running off the water when highly charged with the residuum of the metallic ores, particles of ores, metallic fumes, or mineral acids; G, the bottoms of cylinders or cisterns which can be opened or removed when occasion requires, and man-hole doors into cylinders or cisterns to facilitate the cleansing the cylinders; H, the connections with 10 inlet cocks for keeping the cylinders or cisterns supplied with water; I, water guages to regulate the height of the water contained in the cylinders or cisterns.

I am cognizant that it has been heretofore proposed to employ pumps or fans for drawing or exhausting the products of combustion from furnaces 15 through water, but such application has not been applied with advantage, because the said products of combustion passed through and out of the water in an impure state leaving little or no deposit therein; I am also cognizant that it has been proposed to subdivide the products of combustion by drawing such products through wire gauze, this also has little or no advantage because 20 the said products pass through the perforated gauze in relative proportion to the size of the perforations.

Having thus described the nature of the apparatus for attaining the object of my Invention, and the manner the same is to be used, I would have it understood that I do not claim generally the application of pumps or fans for 25 removing or condensing noxious smoke and vapours, nor for the passing of such smoke or vapours through water; but what I claim is the application of mechanical appliances for keeping water in air-tight cylinders or cisterns agitated during the progress of noxious smoke and vapours of lead, copper, and other ores, or particles of such ores or metals, metallic fumes, or mineral 30 acids generated in working, smelting, or purifying lead, copper, and other ores, through such water in such cylinders or cisterns before discharging such smoke or vapour into the atmosphere, such agitation on the passing of noxious smoke or vapour through water causing a very much larger deposit of metallic particles, fumes, and acids then would be deposited by passing noxious smoke 35 and vapours through water not agitated.

The number of cylinders or cisterns useful for attaining my object being regulated by the greater or lesser impurity of the noxious smoke or vapour to

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be condensed or deposited, the greater the number of cylinders or cisterns the more perfect or complete the condensation or deposit of metallic particles and acids.

5 In witness whereof, I, the said Joseph Matthews Hocking, have here-
unto set my hand and seal, this 28th day of January in the year of
our Lord 1868.

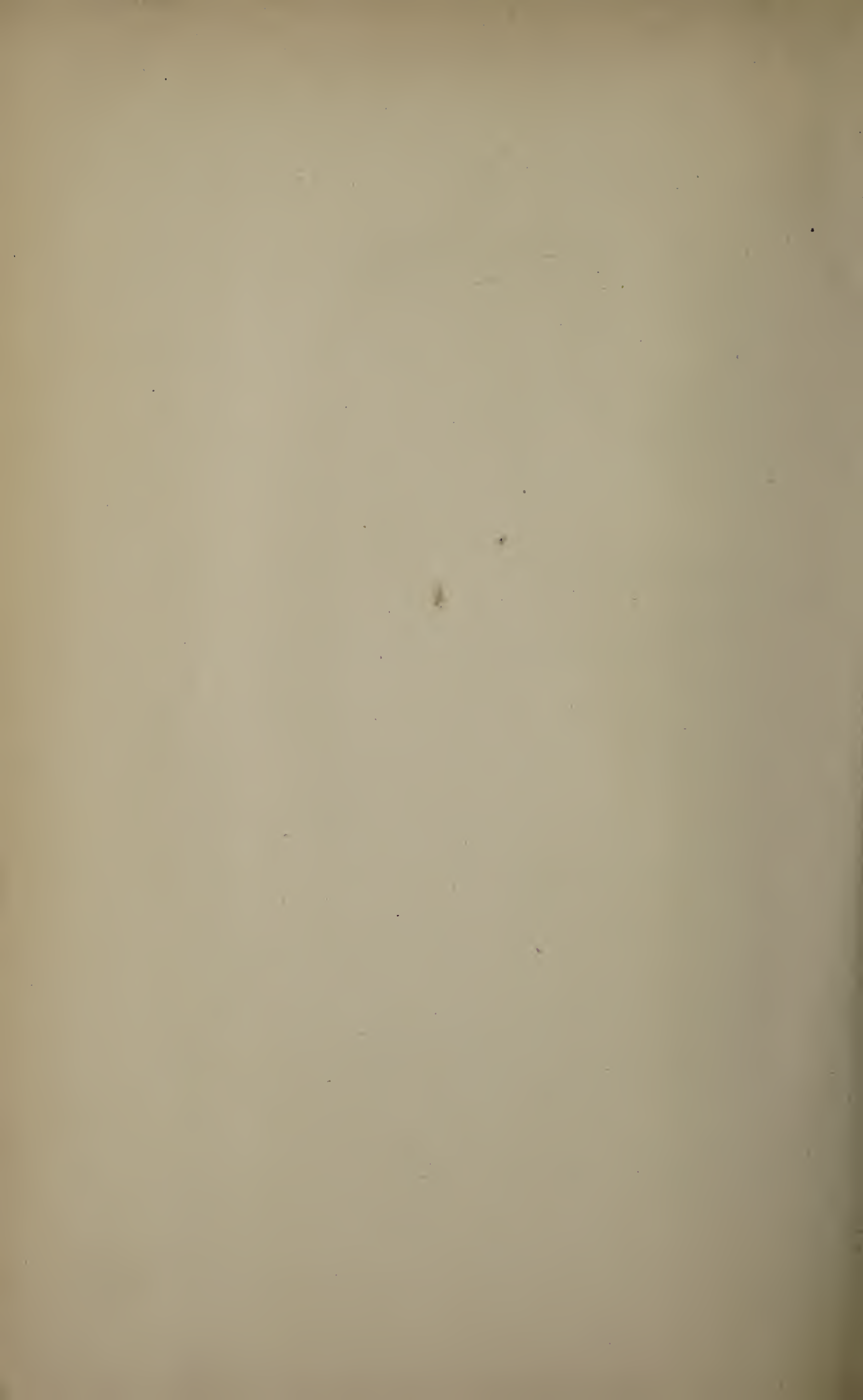
JOSEPH MATTHEWS HOCKING. (L.S.)

Signed, sealed, and delivered by
said Joseph Matthews Hocking,
10 in the presence of

JAMES CASEY,
10, Philpot Lane,
London, E.C.

LONDON:

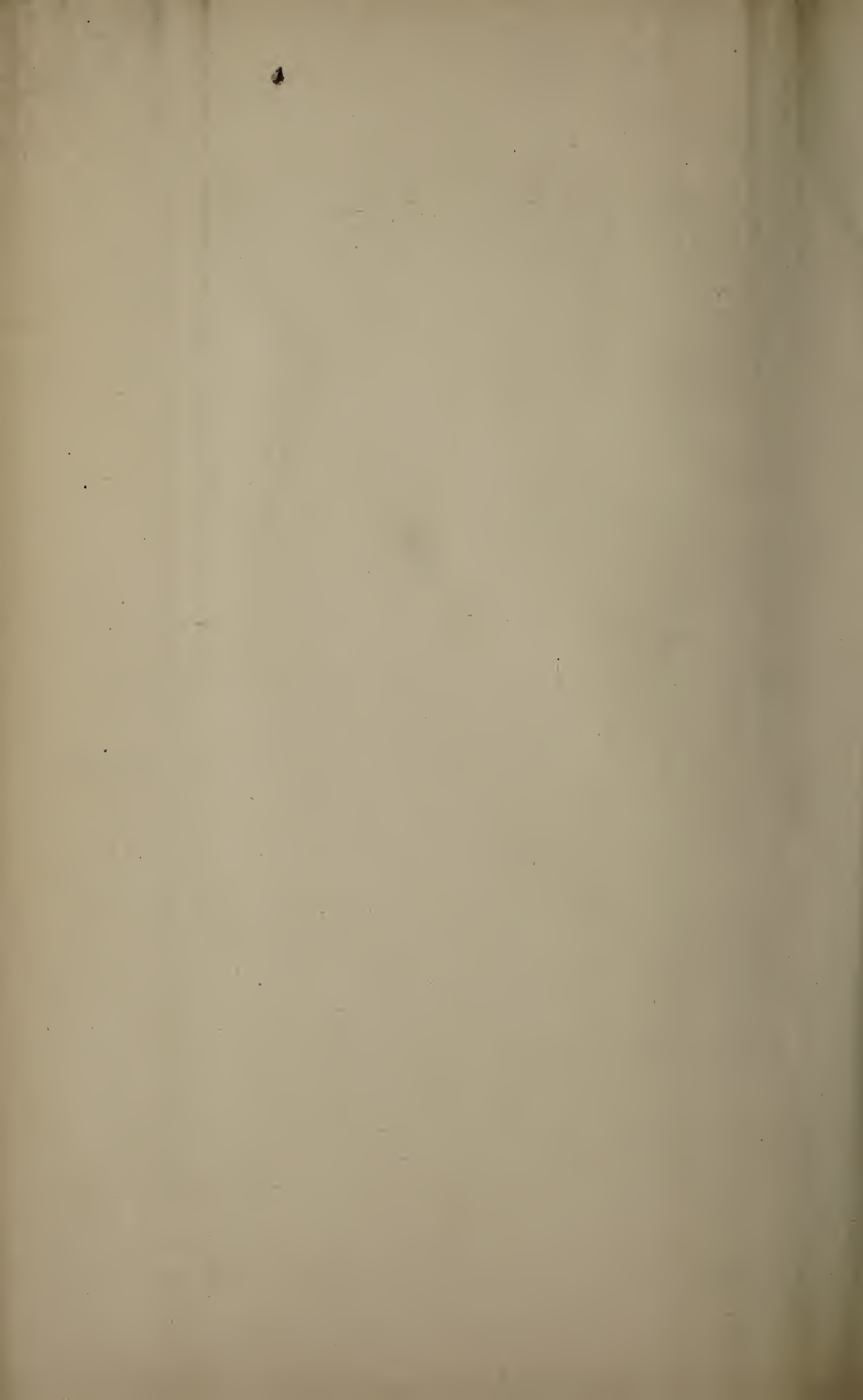
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Printers to the Queen's most Excellent Majesty. 1868.



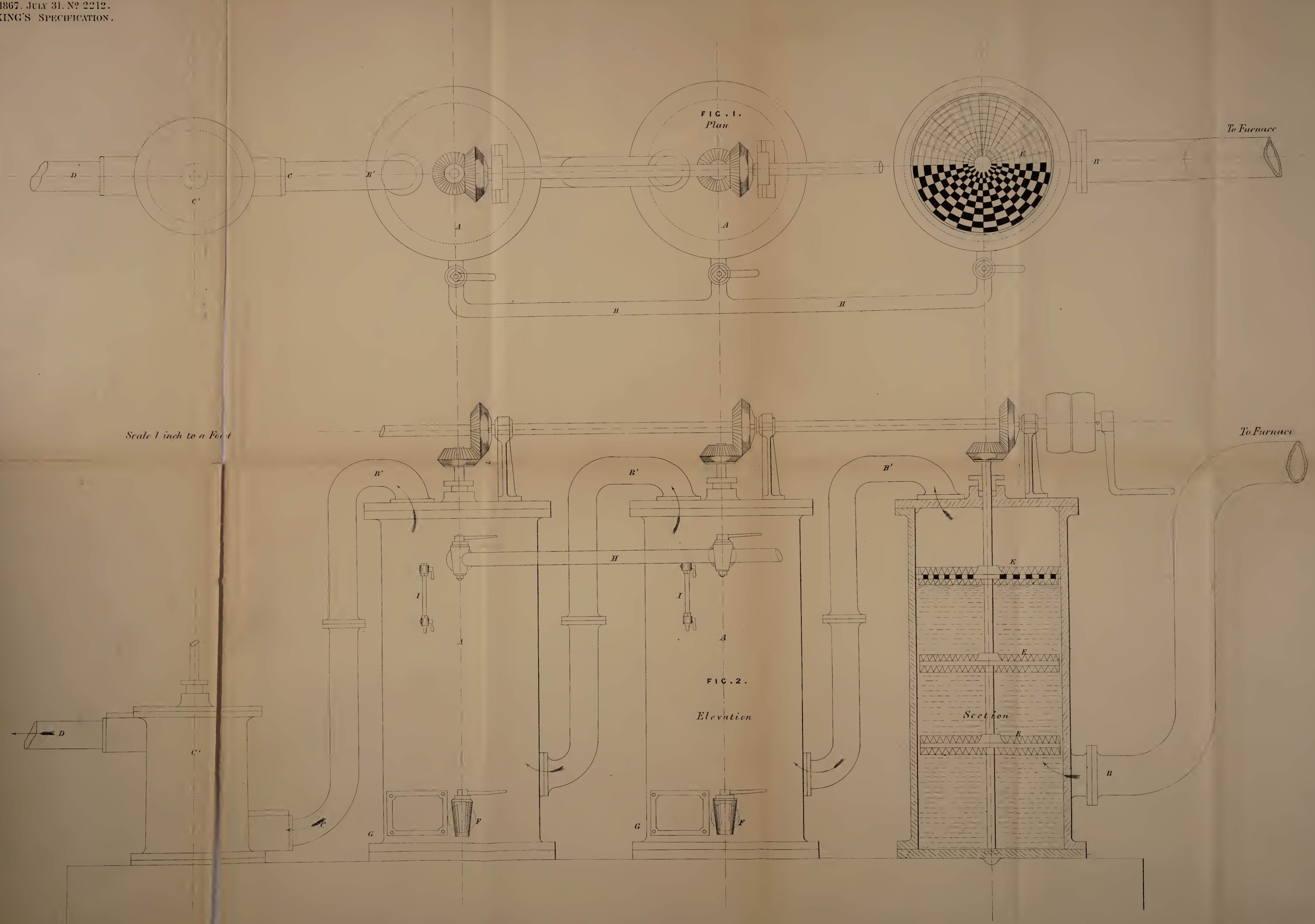








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HOCKING'S SPECIFICATION.



Filed drawing is partly colored.

Drawn on Stone by Malby & Sons.

